Solution by the PROPOSER.

Using a figure similar to the one used in problem 116, let $AOD=\theta_1$, $BOD=\theta_2$, $COD=\theta_3$, etc. Let p be the required chance, p_1, the chance that it does not contain the center of the circle.

$$p_1=\frac{2\int_0^{\frac{1}{2}\pi}\int_0^{\theta_1}\int_0^{\theta_2}\ldots\int_0^{\theta_{n-2}}d\theta_1d\theta_2d\theta_3\ldots d\theta_{n-1}}{\int_0^{\pi}\int_0^{\theta_1}\int_0^{\theta_2}\ldots\int_0^{\theta_{n-2}}d\theta_1d\theta_2d\theta_3\ldots d\theta_{n-1}}=\frac{(n-1)!}{\pi^{n-1}}\cdot\frac{2(\frac{1}{2}\pi)^{n-1}}{(n-1)!}=\frac{1}{2^{n-2}}.$$

$$p=1-p_1=1-(1/2^{n-2}).$$

Also solved with the same result by *J. SCHEFFER*.

MISCELLANEOUS.

133. Proposed by HARRY S. VANDIVER, Bala. Pa.

If a group G of order mn has a subgroup H of order n, and if n has no prime factor which is less than m, show that H must be a self-conjugate subgroup. (Frobenius.)

Solution by G. B. M. ZERR, A. M., Ph. D., Professor of Chemistry and Physics, The Temple College, Philadelphia, Pa.

Let the substitution of the given subgroup (H) be 1, t_2, t_3, ...t_p.

If H is not self-conjugate, multiply it into any substition (S) which is not commutative to it. If the transform (H_1) of (H) with respect to any one of these products contains a substitution ($s^{-1}ts$) of order m^β ($\beta>0$) which is not found in H and if t does not transform H_1 into itself we can form the following rectangle with m conjugate rows of p elements:

$$\begin{array}{llll}
s, & st_2, & st_3, & \ldots st_p \\
ts, & tst_2, & tst_3, & \ldots tst_p \\
st^2, & t_2st^2, & t_3st^2, & \ldots t_pst^2 \\
\ldots & \ldots & \ldots & \\
st^{m-1}, & t_2st^{m-1}, & t_3st^{m-1}, & \ldots t_pst^{m-1}.
\end{array}$$

All the substitutions of a given row transform H into the same group, while any two substitutions from different rows transform H into two different groups. As no substitutions in the given rectangle can be equal to each other, the entire group would have to contain at least $p(m+1)$ substitutions. This is contrary to the hypothesis. Therefore H is a self-conjugate sub-group.

134. Proposed by F. P. MATZ, Sc. D., Ph. D., Professor of Mathematics and Astronomy in Defiance College, Defiance, Ohio.

Give a complete solution of the Jacobian equation $\kappa^2\text{sn}^4u+2\kappa^2\text{sn}^2u+1=0$.